UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,103	12/28/1999	ANOOP GHANWANI	2204/150	9599

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EXAMINER
PRIETO, BEATRIZ

ART UNIT	PAPER NUMBER
2152	

DATE MAILED: 09/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	**Applicant(s)**
Office Action Summary	09/473,103	GHANWANI, ANOOP
	Examiner	**Art Unit**
	B. PRIETO	2152

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 December 1999_ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
  closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-17_ is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-17_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

  If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____ .

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

  a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5)☐ Notice of Informal Patent Application (PTO-152)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _6_ .	6)☐ Other: .

Detailed Action

1.   Drawings have been objected to by the Draftsperson under 37 CFR 1.84 or 1.152, correction noted on PTO-948 is required. A proposed drawing correction or corrected drawings are required in reply to this office action to avoid abandonment of the application. The objection to the drawings are no longer held in abeyance. If reply does not include corrected drawings, proposed corrections, or reply to the drawings requirement, the reply would be held non-responsive.

2.   The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Armitage et. al. (Armitage) U.S. Patent No. 6,347,303 in view of Aggarwal et. al. U.S. Patent No. 6,330,614.

Regarding claim 1, Armitage teaches a system/method related to using a Label Distribution Protocol (LDP) to establishes label switched paths, including,

mapping, associating correlating or binding a first (routing) label from an upstream neighboring device to a second (routing) label from an downstream neighboring device (col 10/lines 52-59, col 10/line 64col11/line 5);

receiving from said upstream neighboring device a protocol message including said first label (col 3/lines 34-38):

swapping said first label with said second label in said protocol message (label swapping, adding-removing labels, col 16/lines 17-33); and

forwarding said protocol message to said downstream neighboring (next hop) device (col 3/line 34-38, col 2/lines 30-33); however the prior art of record does not explicitly teach

wherein said upstream and downstream neighboring devices are in a respective first and second autonomous systems;

Aggarwal teaches a system/method related to using a Label Distribution Protocol to establishes label switched paths (col 8/lines 1-18), teaching combining neighboring devices into autonomous systems and assigning a unique number to each system (col 11/lines 40-51), wherein a first label from an upstream neighboring device of a first autonomous system is mapped to a second label from an downstream neighboring device in a second autonomous system (Fig. 10) (col 11/lines 51-col 12/line 12, lookup mapping, col 4/lines 54-col 5/line 16);

It would have been obvious to one ordinary skilled in the art at the time the invention was made include autonomous systems using the network address assigned number to support multiple networks interconnected via edge and core router devices, as suggested by Armitage.

Regarding claim 2, including features previously discussed and further establishing an incoming label switched path over said first autonomous system (Armitage: col 3/lines 61-col 3/line 7); associating said first label with said incoming label switched path (Armitage: col 34-38); establishing an outgoing label switched path over said second autonomous system (label switched path egress, col 14/lines 31-45, label switched patch egress, col 3/lines 20-33); learning said second label associated with said downstream neighboring (next hop) device in said second autonomous system (Armitage: col 2/lines 45-60).

Regarding claim 3, using a LDP to set up said outgoing label switched path to a downstream neighboring border device (Armitage: col 3/line 50-60, setup, col 4/line 46-51, Aggarwal: group neighboring devices in autonomous system neighboring devices into autonomous systems and assigning a unique number to each system col 11/lines 40-51).

Regarding claim 4, establishing a LDP session with said downstream neighboring (next hop) device (Armitage: col 2/lines 45-60); and receiving said second label associated with said downstream neighboring (next hop) device in said second autonomous system via said LDP session (Armitage: col 2/lines 45-60).

Regarding claim 5, creating/maintaining in said label information base a label information base entry mapping said first label of from said first autonomous system to said second label in said second autonomous system (Armitage: col 10/lines 52-59).

Regarding claim 6, comprising the device for establishing a label switched path across multiple autonomous systems, the device comprising: the logic to perform the method discussed on claim 1, rejected for obviousness under U.S.C. 103, this same rationale is also applied to apparatus and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 7, comprising the device for establishing a label switched path across multiple autonomous systems, the device comprising: the logic to perform the method discussed on claims 1-2, rejected for obviousness under U.S.C. 103, this same rationale is also applied to apparatus and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 8, second label switched path establishing logic comprises LDP logic (Armitage: col 10/line 52-59).

Regarding claim 9, establish a LDP session with said downstream neighboring (next hop) device and receive said second label associated with said downstream neighboring (next hop) device in said second autonomous system via said LDP session (Armitage: col 2/line 50-60, col 10/line 52-59.

Regarding claim 10, label information base, wherein said mapping logic is operably coupled to create in said label information base a label information base entry mapping said first label from said first autonomous system to said second label in said second autonomous system (Armitage: col 10/line 52-59).

Regarding claim 11, comprising the program product comprising a computer readable medium having embodied therein a computer program for performing the method discussed on claim 1, rejected for obviousness under U.S.C. 103, this same rationale is also applied to computer program product and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 12, comprising the program product for performing the method discussed on claims 1-2, rejected for obviousness under U.S.C. 103, this same rationale is also applied to program product and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 13, substantially the same as claims 8 and 3, rejected for obviousness under U.S.C. 103, this same rationale is also applied to program product and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 14, substantially the same as claims 9 and 4, rejected for obviousness under U.S.C. 103, this same rationale is also applied to program product and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 15, substantially the same as claims 10 and 5, rejected for obviousness under U.S.C. 103, this same rationale is also applied to program product and logic means claims, claimed in terms of function, property or characteristic.

Regarding claim 16, a communication system comprising a plurality of autonomous systems (e.g. EGP 1 & EPG 2), each autonomous system having at least an edge or border device (routers linked via Net M connecting said autonomous systems) that is shared with another autonomous system, wherein the shared border device links an incoming label switched path from an incoming autonomous system to an outgoing label switched path in an outgoing autonomous system (Aggarwal: Fig. 10, vol 7/lines 64-col 8/line 12, using LDP to map outgoing label switched path to incoming label switch path associated with downstream

neighboring border device (Aggarwal: mapping outgoing label switch path to incoming switch path, col 4/lines 60-col 5/line 8, learning, col 5/lines 58-col 6/line 21, determining the egress path based, col 6/lines 49-55, Armitage: col 2/lines 50-60, col 4/lines 46-51).

Regarding claim 17, an information base comprising at least one entry mapping a first label from a first autonomous system to a second label in a second autonomous system (Armitage: col 10/lines 52-59).

<div align="center">Citation of Pertinent Art:</div>

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure; Copies of documents cited will be provided as set forth in MPEP§ 707.05(a):

Ref A: Evolution of multiprotocol label switching, Viswanathan, A.; Feldman, N.; Wang, Z.; Callon, R., Bells Labs, Lucent Technol., IEEE Communications Magazine, May 1998, pages 165-173, ISSN: 0163-6804.

Viswanathan et. al. teach multiprotocol label switching (MPLS) including replacing the destination-based hop-by-hop forwarding paradigm with label swapping forwarding paradigm with network-layer routing. Maintaining information from common routing protocols (OSPF & BGP) to determine how packets ought to be routed, including forwarding equivalency classes (FEC). Each FEC is assigned a short, fixed-length, locally significant identifier "label", wherein a packer is "labeled" by encoding a label in an available location in the data link layer or network layer header. As the packet enters a layer-three lookup (mapping) is performed wherein addition to the conventional next hop, the associated FEC with the assigned label is determined, the packet is forwarded to its next hop with the assigned label. The old label is replaced with the new label, and the packet is forward to the next hop. Outgoing label mapping is received by a node from the peer that is the next hop for a stream and allocated and distributed "incoming" labels to upstream peers for a given stream, this label distribution is done via Label Distribution Protocol (LDP). A label switch router (LSR) is considered an egress LSR for a stream if its next hop for that stream is not an LSR or the node located at a routing boundary (i.e. autonomous system). When routing an edge router shared within two or more routing domains (autonomous system, illustrated as a cloud), when a packet arrives at the edge of the cloud, the ingress router performs a route lookup to determine the egress and the forward the packet along the pre-established virtual channel path identifier to the destination switch device (next hop).

Ref B: Traffic engineering standards in IP-networks using MPLS, Ghanwani, A.; Jamoussi, B.;

Fedyk, D.; Ashwood-Smith, P.; Li Li Feldman, N.; Nortel Networks, IEEE Communications

Magazine, Dec, 1999, pages 49-53, ISSN: 0163-6804.

Ghanwani et. al. teaches as prior art that IP networks use routing hierarchy that consists of autonomous systems Ass running an interior gateway protocol (IGP), and reach ability across Ass conveyed using an exterior gateway protocol (EGP), using further well known OSP and BGP-4 for obtaining routing information. Teach MPLS paradigm including the steps wherein when a packet arrives the LSR looks up entries in its label information base (LIB), and determined the output interface and new outgoing label for the packet, the egress edge LSR will remove the label form the packet and forward it as a regular IP packet

Ref C: Label switching and IP version 6, Boustead, P.; Barnett, S.; Chicharo, J.; Anido, G., Telecomm & Info. Technol. Res. Inst., Wollongong Univ. NSW, Australia, Computer Comm. & Networks, 1998, pages 561-565, ISBN: 0-8186-9014-3.

Boustead et. al. teaches performing MPLS related mapping, replacing and forwarding steps by a switching/routing device based on Forwarding and Tag Information Base entries. Internet was viewed as an un-structured and non-hierarchical interconnection of routing domains or Autonomous Systems prior the introduction of the current versions of Border Gateway Protocol (BGP) & Classless Inter-Domain Routing (CIDR) technology.

Ref D: IETF Multiprotocol Label Switching (MPLS) Architecture, Le Faucheur, F., Cisco Syst. Coutboeuf, France, IEEE, June 1998, pages 6-15, ISBN: 0-7803-7982-2.

Faucheur teaches MPLS concepts such as FEC, outgoing/incoming labels, upstream downstream Label Switching Router (LSR), mapping between label and the stream, label assignment and distribution, LDP, Next Hop Label Forwarding tables, label replacements-swapping, TTL, etc.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Prieto, B.** whose telephone number **is (703) 305-0750**. The Examiner can normally be reached on Monday-Friday from 6:30 to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, **Mark H. Rinehart** can be reached on **(703) 305-4815**. The fax phone number for the organization where this application or proceeding is assigned is **(703) 308-6606**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is **(703) 305-3800/4700.**

Any response to this action should be mailed to:
Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

Or:

(703) 305-7201 (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Fourth Floor (Receptionist), further ensuring that a receipt is provided stamped "TC 2100".

**ROBERT B. HARRELL
PRIMARY EXAMINER**

B. Prieto

Patent Examiner

September 19, 2002